

Building Energy Codes: An Important Component of Climate Policy

**Commissioner Philip Giudice
Massachusetts Department of Energy Resources**

on behalf of the

Commonwealth of Massachusetts

and the

National Association of State Energy Officials (NASEO)

1-2:00 p.m.

June 22, 2009

2322 Rayburn House Office Building

On behalf of Governor Patrick, the Commonwealth of Massachusetts, and the National Association of State Energy Officials, thank you for the opportunity to address the critically important issue of building energy codes -- a cornerstone strategy to effectively respond to our energy and climate challenges.

While energy use in buildings accounts for approximately 40% of total energy consumption in the United States, it represents more than half of all energy use in Massachusetts.

Yet much of this energy is wasted. Cost effective technologies and building practices exist today which provide the same or better comfort with a fraction of the energy consumed, with lasting value that stays in our economy. We simply need to be much more strongly motivated to fully deploy these better approaches, and that is where building codes play a critical role.

Voluntary efforts to improve buildings have had an effect. Programs such as LEED and Energy Star are raising awareness, and more and more tenants are asking for green buildings. Even today, in a difficult real estate market, there is significant demand around the country for “green” high-efficiency buildings, in both the commercial and residential sectors. However, market forces alone are not moving us fast enough or far enough to reduce our energy wastage.

The imported fuel costs associated with our buildings are a drain on our economy, and a threat to our security and to our climate. The building decisions we are making now we will be living with for decades and decades to come. We can accept no excuses. We need to stop building energy wasting buildings now. National building codes are the only way to move our nation forward far enough fast enough.

Energy Code in Massachusetts

Massachusetts is strongly motivated to be a leader in promoting the use of both energy efficiency and renewable energy and we have recently given a lot of attention to current and future building codes and standards. I am going to briefly outline our three pronged approach, which shares many of the key features that we are very pleased to see in the Waxman-Markey bill.

1. We have made a legal commitment to adopting the latest national energy codes from the IECC and ASHRAE, coupled with building commissioning, and the training and outreach needed to implement these codes effectively. Our state law also mandates automatic updating when these codes change.
2. We have adopted a ‘stretch’ code, built on Energy Star, RESNET and NBI Core Performance programs to allow communities in MA the option (with incentives) to go 20-30% beyond the latest IECC and ASHRAE codes.
3. We are leading in the consideration of building energy codes of the future through our Zero Net Energy Buildings Taskforce. Commissioned by Governor Patrick, their final report earlier this year prioritizes building performance testing,

building labeling and ongoing commissioning of new and existing buildings with the goal of zero energy buildings by 2030.

Energy Code in the Waxman Markey House bill

The Waxman Markey bill addresses building energy codes in sections 201 through 204. We see in this bill a federal program that moves the nation forward along a path that complements and enhances our efforts at the state level.

30% improvements are ‘Shovel ready’ National codes

MA was one of a coalition of states and municipalities pushing for a 30% energy efficiency improvement over the IECC 2006 code, at the ICC code hearings in Minneapolis last year. We came tantalizingly close to adopting an IECC vetted 30% improvement in the 2009 code (it fell 5 votes short). This is the same standard that the Waxman Markey bill would bring into effect within two years of enactment. The work has been done to ensure the cost-effectiveness and practicality of the code changes to reach this target, so it is ‘shovel-ready’ energy code.

It is also critically important to back up code changes with the technical assistance, training and performance testing needed to ensure that policy translates into changes on the ground. We commend the attention to building commissioning; to test performance, and funding to support the training that ensures that builders and contractors have the skills they need.

50% code improvements by mid-decade is not a ‘stretch’

The house bill subsequently calls for an additional 20% improvement in codes to reduce energy use to 50% below the IECC 2006 code by 2014-15 to be implemented within 2 years. This is only an iterative step beyond where we are already headed with our optional ‘stretch code’ in MA which takes effect next year. The residential portion of our stretch code requires a minimum of 35% below 2006 codes, but we are already seeing buildings 50% or more below the 2006 baseline. We built our stretch code on the proven base of the existing Energy Star homes program, and the RESNET HERS index that it uses for performance testing. Rating homes with the HERs index rewards the growing numbers of builders who build beyond the energy code now, and in the process provides a proving ground for the building practices and design efficiency that everyone in the industry can benefit from.

The commercial component of the stretch code is similarly more than halfway towards the 2015 targets today, and was developed in partnership with the New Buildings Institute and other national code experts, through the help of the Northeast Energy Efficiency Partnership (NEEP). We are pleased to see these same groups and programs mentioned as the places where Secretary Chu and the Department of Energy should look for code expertise, and we hope that our stretch code example will be field tested by other states, and help provide a blueprint for the next iterations of the IECC code in 2012 and 2015.

A Glide path to Zero Energy Buildings

In the longer term, economic competitiveness and climate change imperatives require us to move as far and as fast as we can toward Zero Energy Buildings. These are buildings that combine energy efficiency and renewable energy to serve as a resource rather than a burden for American businesses and families. We are hosting our first annual zero energy homes awards next week, for truly zero net energy homes. The winning developers have HERS¹ ratings down below zero to -2 and -4 – these homes will produce 2-4% more energy than they consume.

Fully deploying zero energy buildings will take time, but it will also create high value domestic jobs, and marketable and exportable skills for our building sector industries, provided that we commit to taking a lead.

Governor Patrick's taskforce on Zero Energy Buildings draws on our relative wealth of experts in architecture, engineering, and real estate development. I encourage you to read the full report available on our website, but the key findings and recommendations are:

- i. Shift from prescriptive energy standards to performance tested buildings – to reward integrated design which achieves needed energy performance outcomes
- ii. Adopt comprehensive building energy labeling – to allow the real estate markets to value energy efficient design
- iii. Develop programs and incentives to reduce energy consumption in existing buildings – new construction is only 1% of the building stock each year.

Again, we find the Waxman Markey bill to be right on target, with section 202 proposing the development of an existing buildings energy retrofit program, and section 204 proposing the development of a building energy rating system. Both of these programs can build on existing efforts and knowledge in the sector and should be prioritized for rapid development and deployment.

¹ From: http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_HERS The HERS Index is a scoring system established by the Residential Energy Services Network (RESNET) in which a home built to the specifications of the HERS Reference Home (based on the 2006 International Energy Conservation Code) scores a HERS Index of 100, while a net zero energy home scores a HERS Index of 0. The lower a home's HERS Index, the more energy efficient it is in comparison to the HERS Reference Home.

Each 1-point decrease in the HERS Index corresponds to a 1% reduction in energy consumption compared to the HERS Reference Home. Thus a home with a HERS Index of 85 is 15% more energy efficient than the HERS Reference Home and a home with a HERS Index of 80 is 20% more energy efficient.

Existing buildings need a program

New construction matters, but even in the fast growing states in the sunbelt, it is just the tip of the iceberg. We have massive energy liabilities in our existing building stock, both residential and commercial. While we have a well developed energy efficiency retrofit program operated by our electric and gas utilities, that is undergoing rapid expansion, we need to do more. The time is right for a national program to reinvest in our existing buildings and cost-effectively upgrade our energy infrastructure.

Building labeling enables market forces

If homebuyers, real estate investors and prospective tenants knew what their future energy bills were likely to be, they would demand efficiency improvements or factor in these costs before making financial commitments. For this reason, it is essential that the energy use of buildings be calculated in a standardized way, such as BTU's per square foot, and that these figures be publicly available. Then these numbers need to be converted to an easily understandable label, such as the current Energy Star labels on domestic appliances. ASHRAE has already begun developing such a scale, and broad energy labeling is already being implemented in several European countries, including the United Kingdom, Germany, and Austria.

Building labeling helps the industry make smart investments and also helps the new construction market to differentiate its product from the existing relatively energy inefficient building stock. Property values should reflect true energy costs to allow market forces to work in our national interest. Bold action will strengthen, not weaken our real estate sector, and add green jobs and skills to our workforce.

Manufactured housing is ripe for upgrades

Within the existing building stock, multi-family and manufactured buildings stand out for special attention, and we commend Section 203 of the Waxman Markey bill for providing it. Such homes represent over a quarter of the housing units in the U.S. and comprise 20% of energy consumed by all housing units.

Historically, manufactured homes have been some of the least energy efficient units, provided for the least financially able members of society. Yet such housing is also an efficient method for producing well-constructed and sealed homes, from both an air and water tightness perspective. This makes replacing older manufactured homes with Energy Star homes an excellent economic investment with additional invaluable social equity and public health benefits. Technologies such as structurally insulated panels, coupled with energy recovery ventilation systems and ductless mini-split heat-pumps can transform the manufactured homes sector, so that formaldehyde and mold scandals and energy poverty are things of the past.

Alternative Paths

Some may wonder why we need national legislation to address this matter. Why don't we just let the market do it? Or why don't we just let each state do it? Regretfully,

national leadership is our only option for success. The market forces pushing for greener buildings are laudable and are building momentum but unfortunately are far too weak to affect the change we need in the time frame we need. Similarly addressing these issues on a state by state basis will simply take too long.

But won't this be a major financial burden for builders and for home and commercial building buyers and tenants at exactly the time when they, and our economy, can least afford it? A patchwork quilt of policies and practices on energy efficient building codes increases the confusion and burdens on builders, buyers and tenants. In fact, putting forward bold national standards will provide the building industry the least cost path forward to modify their practices, and deliver life cycle cost savings that far exceed the minimal initial cost in extra investment.

Conclusion

We must all look to the future and design and build for it now. That requires educating ourselves, as private citizens and companies, and public institutions, on the vast potential for improving the efficiency of our buildings. Energy codes that address our 21st century energy and climate imperatives are needed to move us collectively forwards. Energy labeling of homes and commercial space is critical, much as refrigerators and cars are labeled today. We need to know if our buildings are an 'A' or an 'F' and be able to make investments accordingly. Massachusetts is committed to doing this, but we recognize and strongly support federal action, to raise national building codes and standards along the lines of the Waxman – Markey bill.

I am encouraged by your engagement in this matter, and as my testimony has indicated, encourage us all to be bold. I suspect that decades from now, no matter how bold we think we are being in this process today, we will look back at this time and wish we had been bolder.